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Managing Congestive Heart Failure : A Study Comparing The Management Provided By A Cardiologist, Family Physician And Nurse Practitioner

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DEDICATION

We, the researchers, dedicate this research to our family and friends who have supported us throughout this milestone in our careers. It is our hope that our newly developed ability to help others with our enhanced knowledge and skills will somehow compensate for the sacrifices that were made to accomplish our goals of becoming nurse practitioners. We realize how enriched our lives are with the abundant balance of love, support, and consideration.

The authors of this research would like to recognize each other. Together, we adopted this topic and developed it into to a passion and a commitment. We felt it was a much needed platform for the children of our society. Early in this project, we recognized our talents and utilized them wisely. We have truly developed lifelong professional relationships as well as friendships. Respect has been free flowing between us for the last year. The group would like to recognize Alena Lester for her exceptional planning, delegation and patience throughout this process. The entire success of this project can be attributed to her superb leadership abilities.

To our colleagues: We hope that the readers of this piece will realize the impact of this problem and commit to making a difference in children's lives.

ACKNOWLEDGEMENTS

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Are Health Care Providers Following Evidence-Based Practice Guidelines for the Screening, Diagnosis, and Treatment of Childhood Obesity?

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Abstract

There are national guidelines established as evidence-based practice, for the screening, diagnosis, and treatment of childhood obesity. These guidelines are reviewed and updated regularly by organizations devoted to improving the health care of pediatric patients. The incidence of childhood obesity will continue to rise with noncompliance. A list of research questions were used in a quantitative, retrospective chart review and the answers were recorded on a data worksheet to determine compliance with these guidelines. The study took place in three separate Mississippi clinics providing pediatric medical care. Three hundred charts were randomly selected that met the sample requirements of age 2 to 18 years and having a diagnosis code of 278.02 or 278.00, or a Body Mass Index of 85th to 95th percentile for overweight or greater than 95th percentile for obesity. Descriptive statistics were used to describe and format the collected data. The researchers identified the mean age of onset for childhood obesity as 11.3 years of age, with an average BMI of 27.5. The highest prevalence of childhood obesity was identified in African-American males, and in those children with State funded insurance. Treatment initiation and education provision rates were higher for children identified as overweight or obese, and lower for those with State funded insurances.

TABLE OF CONTENTS

CHAPTER 1

Dimensions of the Problem

Introduction

According to the Centers for Disease Control and Prevention (CDC), approximately 17% (12.5 million) of children and adolescents ages 2 to 19 years are obese. These statistics have tripled since 1980, a sign that past and present efforts have not improved the rates of childhood obesity (CDC, 2011). Finkelstein, Trogdon, Cohen, and Dietz (2009) reported an increase of $40 billion in medical spending related to obesity from 1998 to 2006 with a predicted cost of $147 billion per year by 2008. The cost of childhood obesity is devastating on the United States' health care funds. Menifield, Doty, and Fletcher (2008) reported the Southern states as having the highest prevalence of obesity in the United States with Mississippi leading the nation.

The United States Preventative Services Task Force (2010) recommends behavioral counseling referral for obese children 6 to 18 years of age. Screening tests should include a calculated Body Mass Index (BMI) or weight percentile using BMI-for-age and gender growth charts. Interventions should be comprehensive and include diet, exercise, and counseling. Health care providers can actively reduce the incidence, cost, and morbidities related to childhood obesity with the use of evidence-based practice guidelines.

Problem Statement

Childhood obesity is a growing health problem in the United States. Compliance with national guidelines for the screening, diagnosis, and treatment of childhood obesity is essential to decrease the prevalence of childhood obesity. Currently, there is limited data regarding the compliance of health care providers with evidence-based guidelines for the identification and management of obesity.

Wethington, Sherry, and Polhamus (2011) conducted a cross-sectional study to determine the use of BMI-for-age and gender charts for the evaluation of childhood obesity by pediatricians. The researchers concluded that less than 50 % of pediatricians utilized the BMI-for-age and gender in the screening of children for obesity, and an even lower percentage of general practitioners used them. Less than 65 % of pediatricians and less than 37 % of general practitioners reported having access to a pediatric obesity specialty clinic. The researchers suggested that greater education for pediatricians on the latest recommendations for the evaluation and treatment of childhood obesity was needed to prevent obesity and its comorbidities.

Statement of Purpose

The purpose of this study was to determine if health care providers are following evidence-based guidelines for the screening, diagnosis and treatment of obese children. Body Mass Index (BMI), blood pressure, lipid levels and glucose levels aid in determining risk factors for the comorbidities associated with childhood obesity. A BMI measurement is recommended at each well-child visit.

Significance of the Study

In 2011, the South demonstrated the highest prevalence of obesity in the United States, with Mississippi showing the highest at 34.9%. A strong correlation has been shown with obesity and health conditions such as heart disease, stroke, diabetes and cancer. These health conditions are among the leading causes of death in the United States (CDC, 2012a). The prevalence of childhood obesity has tripled in the past three decades, along with its associated health risks. Health risks of obesity include cardiovascular disease, diabetes, bone and joint disease, sleep apnea, as well as social and developmental problems. Compliance with nationally

recommended evidence-based guidelines may aid providers in reducing the incidence, associated risks, morbidities, and the national medical costs of childhood obesity (CDC, 2012b).

Theoretical Framework

Dorothea Orem's Self-Care Theory was the theoretical framework for this research related to its assumption that meeting universal and development self-care essentials is a critical part of primary care prevention and illness. Prevention is the primary goal for childhood obesity and its adulthood related comorbidities.

Obesity may develop from childhood to adulthood with progressive comorbidities and disease as a person ages. Orem's self-care theory was applicable to the current research in that it promotes the identification of self-care needs as early as possible in the illness process. It recognizes the provider's role in education and health promotion as a key variable in aiding children in meeting physical, emotional, and developmental milestones. Self-care practices are directed toward the caregivers or parents, when addressing vulnerable populations, such as children. Health care practices of the parents may influence the health behaviors of the children later in adulthood. Self-care practice could provide the client the lifelong tools to maintain a constant state of health. It could increase coping in states of illness preventing further decline or an increase in comorbidities. Clients' perceptions of health and illness affect their self-care needs. Observation of these self-care needs and of the patient's readiness to change, allows the health care provider to offer the tools necessary for change or improvement (Denyes, Orem, & Bekel, 2001).

Dependent care agents (parents) are responsible for making sure the children receive educational information needed to reduce the risks of illnesses associated with obesity. Orem's Self-Care theory may be used to identify self-care deficits and design a plan of care specific to

the competence and activity level of the client. Dietary education should be provided in easy to understand formats accompanied by visual aids. Therapeutic self-care plans should include activities that are successful in weight reduction and maintenance. Psychological needs should be included in the plan of care. Care plans should be motivational and should include variations that will promote interest of self-care and address self-care deficits (Haas, 1990).

This research revealed the practices, interventions, and environments that strongly influence childhood obesity. This study may increase awareness, provide education, and may decrease the risks of childhood obesity. Childhood obesity management and prevention is a combined effort of the patient, the parents, and the health care provider.

Research Questions

The goal of this research project was to determine if health care providers are following evidence-based guidelines in the screening, diagnosis, and treatment of childhood obesity. The following research questions were created for this research study:

1. Was the child's overweightness or obesity addressed on the initial visit by the health care provider?
2. Was treatment initiated by the health care provider?
3. Was education provided by the health care provider?

Definition of Terms

Childhood Obesity.

Theoretical. Children and adolescents with a Body Mass Index greater than the 95th percentile are considered obese (American Academy of Pediatrics, 2012).

Operational. The diagnosis of childhood obesity (ICD-9 code 278.00) assigned to each pediatric client's chart chosen for data collection, or a calculated Body Mass Index greater than the 95th percentile (ICD9data, 2012).

Childhood Overweight.

Theoretical. Children and adolescents with a Body Mass Index in the 85th to 95th percentile (American Academy of Pediatrics, 2012).

Operational. The diagnosis of childhood overweight (ICD-9 code 278.02) assigned to each patient, or a calculated Body Mass Index in the 85th to 95th percentile (ICD9data, 2012).

Education.

Theoretical. Information about or training in a particular subject (Oxford Dictionaries Online).

Operational. Informing the clients of specific lifestyle modifications that would be beneficial to the patient's condition.

Heath Care Provider.

Theoretical. A person who helps in identifying, preventing, or treating illness or disability (Word Web Online, 2012).

Operational. A health care provider in three separate pediatric settings in three separate Southern states who manage care of pediatric patients.

Treatment.

Theoretical. Any specific procedure used for the cure of a disease or pathological condition (Taber's Cyclopedic Medical Dictionary, 2009).

Operational. Providing a management plan that includes diet, exercise, medications, or other treatment options.

Assumptions

The authors assumed that the data needed for the research would be available upon review of each chart, and that the charts would be legible and comprehensible. It was assumed the data would be gathered accurately and in a professional and ethical manner. Lastly, it was assumed the data collected would be interpreted correctly by the researchers.

Limitations

Limitations of this study included a limited time frame for data collection, small sample size, limited demographic data, and inadequate recording of BMI. Additional limitations included differences in provider practices, differences in record keeping, and differences in instrumentation used to measure BMI. The last limitation of this study was the use of a convenience sample chosen only from a specific region of the United States.

Summary

The researchers identified a need for compliance with evidence-based guidelines in the screening, diagnosis, and treatment of obese children. A chart review was conducted using a recording worksheet to show the guidelines used by pediatric health care providers. The researchers used Dorothea Orem's Self-Care theory as the theoretical framework for this study to show the need for provider, parent, and patient cooperation in the management of childhood obesity. The researchers developed questions to guide their investigation. These questions were answered at the conclusion of the study. Terms associated with the study were defined both theoretically and operationally. Assumptions were made before data collection.

CHAPTER 2

Review of Literature

Introduction

National guidelines have been set forth to decrease the incidence of childhood obesity and the prevalence of adult comorbidities associated with childhood obesity. These respected guidelines were established by such organizations as the Centers for Disease Control and Prevention (CDC) and the American Academy of Pediatrics (AAP). These guidelines are regularly updated after thorough reviews of the most recent evidence for the evaluation and treatment of childhood obesity. There were limited studies that showed compliance with these guidelines. A comprehensive literature review was conducted. Studies showing the prevalence of obesity, indicators for comorbidities of obesity, and effective evaluation tools in childhood obesity for the children between the ages of 2 and 18 years were analyzed.

Theoretical Framework

Orem and Taylor (2011) define self-care as a regulatory function that must be performed in the best interest of life, health, and well-being. Self-care must be performed by the individual, or it must be performed for that individual. In order for the individual to be able to perform self-care, the person must be willing and capable of performing the actions necessary for self-care. Children have varying degrees of self-care agencies based on developmental status. Family support is a critical factor that can influence self-care behaviors of children. Parents with more knowledge may be better equipped to help children perform self-care on a much higher level than those with little knowledge (Orem & Taylor, 2011).

Deroo (2008) used the self-care model to produce a pamphlet that explains childhood obesity and the health outcomes as they relate to parents and caregivers. This pamphlet includes

tactics that parents can institute in preventing obesity. She suggests that mothers are critical to the self-care of children because mothers play a large role in shaping the diet and activity patterns of young children.

Orem's Self-Care Theory relates to the management of childhood obesity in that children are dependent on their parents or caregivers to address any health care needs, to support medical management offered by the health care provider, and to serve as educational conduits between the provider and the child. Parental ideas of health and illness may influence the success of obesity management.

Related Research

Screening and Diagnosis

Prevention of childhood obesity identified as essential in decreasing the incidence of the disease. Screening and diagnosis guidelines may differ from provider to provider. Differences may be due to the lack of evidence to support definitive guidelines or the absence of pediatric obesity specialty clinics.

Barlow (2007) reported revisions made by an expert committee panel on the evaluation and treatment of childhood obesity. The original recommendations, created in 1997, were revised because of the lack of evidence available at the time the recommendations were made. An increase in availability of evidence and reviews prompted a committee of representatives from 15 national health care organizations to assemble. The objective of this committee was to perform reviews of the latest evidence available for the evaluation and treatment of childhood obesity. The committee also provided recommendations based on professional experience to supplement the absence of evidence-based data. Members were nominated based on their expertise in caring for children at high risk for obesity. The members, experts in the fields of

medicine, nutrition, nursing, psychology, and epidemiology, formed a committee to address the lack of quantitative evidence in this area of practice. The committee used a mixture of statistical evidence and experience in childhood obesity, based on an evidence rating system, to form reports (Barlow, 2007).

Epidemiology reports demonstrated a national increase in the prevalence of childhood obesity, tripling from approximately 5% from 1963-1970 (a 7-year span) to 17% from 2003 to 2004 (a one-year span). This prevalence was measured against a cut-off point of the 95th percentile for Body Mass Index (BMI) for gender and age. Demographic statistics varied among different ethnic groups and among low and high-income families. Causes of childhood obesity were numerous and were linked to such influences as genetics, environment, behavioral responses to energy deficits or expenditures, and the amount of food consumed. There were limitations to these studies related to their dependency on patient reliability in recording and reporting (Barlow, 2007).

Committee members recommended the BMI as the essential screening tool at each well-child visit. BMI is a calculation based on body weight and height. An increase in BMI could be related to an increase in the risk of health related illnesses, as well as an indicator for future morbidity and mortality. In children, the BMI changes with age and requires a continuous assessment specific for age and gender. BMI validity may be affected by the cutoff points used in its measurement. A high cut-off point may increase the risk of under-classifying, and a low cut-off point may increase the risk of over-classifying a patient (Barlow, 2007).

Children with a normal BMI should be screened for familial or environmental risk factors for obesity. The use of two cut-off points, the BMI of the 95th percentile (or greater than 30kg/m squared) and the 85th percentile may decrease the risk of over and under diagnosis. In

addition, there was a recommendation for a third cut-off point to allow for the distinction between obesity and severe obesity in older children to recognize the higher health risks associated with this percentile. The third cut-off point would be the 99th percentile BMI or a BMI of approximately 30-32kg/m squared for children 10-12 years of age, and greater than or equal to 34 kg/m squared for children 14-16 years of age. Once the BMI was measured, it was plotted on a growth chart on a BMI curve. BMI along with the child's health, family history, and the provider's clinical judgment were used in determining the appropriate treatment of the child (Barlow, 2007).

A change in assessing obesity risk from a simple identification system to a universal assessment, prevention, and intervention process was recommended. The committee allocated for a chronic care model for providers rather than an acute care model. The chronic care model called for an integration of community resources, an expanded practice team, and a clinical information system that could aid in monitoring the following of evidence-based care guidelines. Assessment recommendations of the expert committee included a yearly assessment for all children. This assessment should include height, weight, and BMI for age. These measurements should be plotted on the proper growth charts. The recommended weight classifications used were as follows: 2 to 18 years of age with a BMI greater than or equal to the 95th percentile for age and gender or BMI greater than 30 were considered obese; individuals with a BMI of greater than or equal to the 85th percentile but less than the 95th percentile for age and gender were classified as overweight; and the use of the 99th percentile for age and gender. The committee also recommended a qualitative assessment of dietary patterns, a readiness to change, level of activity, and a thorough family history for obesity and its comorbidities at each well-child visit.

In addition, the committee recommended a thorough physical exam to include the measurements of BMI, blood pressure, and laboratory testing (Barlow, 2007).

Treatment recommendations by the committee addressed weight management and lifestyle changes with all patients using a staged method based on BMI, comorbidities, parental weight, and family support. The staged-method was recommended for children between the ages of 2 and 19 with a BMI greater than the 85th percentile. The stage approach offered treatment recommendations in four increasingly intense stages. Advancement through the stages was dependent of the patient's progress, response to treatment, age, degree of obesity, health risks, and motivation. It was strongly dependent on patient drive and support. The committee comprised a fifteen-minute obesity prevention protocol that summarized the assessment and how the provider may address patient responses or concerns and encourage the patient to progress through each stage. Each stage included behavior, physical, and nutritional guidelines depending on the child's weight percentile (Barlow, 2007).

Preventive recommendations were both patient centered and practice or community based. The patient centered interventions included counseling on dietary and activity changes. Community based interventions included government level mandates for physical activity in the schools, support of the local development of parks, and encouraging families with obesity to increase physical activity as a family (Barlow, 2007).

The committee addressed the gaps in statistical evidence in the field of childhood obesity, with practice experience. Although experts in a combination of fields associated with childhood obesity were used, professional and personal interpretation can produce bias, weakening the study. The lack of quantitative studies available for the experts to review provided opportunity for bias and variances in practice. The development of BMI-for-age and gender growth charts

offered a more definitive process for statistical recording of childhood obesity and its prevalence (Barlow, 2007).

The prevalence of childhood obesity called for an increased effort to discover the best evidence-based practices in the prevention and management of this health problem. Childhood obesity may lead to an increased incidence in cardiovascular disease, diabetes, and gastrointestinal illnesses. The researchers addressed the importance of assessment, prevention, and treatment of childhood obesity and offered professional, evidence-based, and experience-based guidelines to decrease the incidence of these disease processes. Future researchers could use this information to guide their efforts in regions and populations with a high prevalence of childhood overweight and obesity (Barlow, 2007).

Screening overweight and obese children for comorbid conditions is imperative for the health of this population. Hypertension is a known risk factor for cardiovascular disease in adults. Early screening for hypertension in children could decrease the prevalence of young adult or adult cardiovascular disease.

Sorof, et al. (2004) performed a school-based screening study using a sample of 5,102 students from eight public schools in Houston, Texas. The students chosen were ages 10 to 19 years. Schools were selected for their ethnic distribution to compare the sample to the city's census data. Data were collected upon school entry or sports participation physicals.

Weight and height of each student was measured and BMI was calculated. BMI *z*-scores were calculated using equations provided by the Centers for Disease Control and Prevention. The exact BMI of each student was calculated and the participant was classified in the appropriate percentile. Three blood pressure and heart rate measurements, with the patient seated, were recorded after a rest period of approximately three minutes for each student.

Students measuring greater than the 95th percentile, as established by the National High Blood Pressure Education Program (NHBPEP) Task Force, were contacted for a second screening one to two weeks later. Students measuring in the 95th percentile with the second screening were contacted to return for a third screening one to two weeks later (Sorof et al., 2004).

Demographic and clinical variables showed the study contained 49% males and 51% females. Race and ethnicity of the participants was determined as 44% White, 25% Hispanic, 22% African-American, 7% Asian, and 2% other. The overall prevalence of overweight (>95th percentile) of the entire student sample was 20%. The study showed a higher prevalence of overweight in males than in females, and Hispanics than in other ethnicities. The prevalence of high blood pressure was determined to be 19.4% on the first screening, 85% of whom underwent a second screening. A prevalence of 56% for high blood pressure was determined for those students who underwent a second screening. A prevalence of 54% for persistent hypertension was determined for those students who underwent a third screening. The overall estimated prevalence of hypertension was 4.5%. The prevalence of high blood pressure among the different ethnicities was highest in Hispanics with the first screening, but showed a lower significance level after three screenings between all ethnicities (Sorof et al., 2004).

The dominant determinant of hypertension was BMI percentile. The researchers found a greater than four-fold increase in the prevalence of high blood pressure at first screening with an increase in BMI percentile, from 9% in the 5th percentile to 38% in the 95th percentile. A greater than five-fold increase in hypertension was determined as BMI increased. The researchers found a progressive increase in systolic blood pressure with increasing BMI percentile, but no associated change in diastolic blood pressure (Sorof et al., 2004).

The researchers determined a higher prevalence of pediatric hypertension than the estimated 1% by the task force, with a strong correlation (a high confidence interval) to overweight. This higher prevalence could be contributed to a skewed distribution of higher BMI percentiles in the study population. Weaknesses of the study included only screening students upon enrollment or those who are to take part in sports, the lack of consideration of extrinsic effects on blood pressure such as familial history, a complete physical exam and medical history, diet and exercise routines, and sleep patterns. Enrollment protocols, timing, stress of enrollment and school, time of day and time of year that recordings were made, and absenteeism could exclude possible hypertensive students and skew blood pressure readings. The strengths of this study included the versatility of ethnicity (similar to the city census), the use of nationally approved guidelines for determining BMI percentile, the large sample size, and random selection (Sorof et al., 2004).

The researchers established a need for early screening for childhood hypertension in children classified in higher BMI percentiles. They also stressed the need for further research in discovering other causes of childhood hypertension other than overweight. They showed the importance of serial blood pressure checks in determining a child's hypertensive status, even above the recommended two screenings by the National High Blood Pressure Task Force (Sorof et al., 2004).

The Morbidity and Mortality Weekly Report is a publication of the Centers for Disease Control and Prevention. The National Health and Nutrition Examination Survey (NHANES) is a continuous cross-sectional survey of the health and nutritional status of the Unites States non-institutionalized civilians. Data from the 1999-2000, 2001-2002, 2003-2004, and 2005-2006 surveys were used to complete an analysis report of the results (CDC, 2010).

Approximately 6000 survey subjects were selected by a multistage probability design, including a household interview and a physical exam. The exam included measurements of size, weight, BMI, and serum laboratory values. A random sample of persons fasting for 8 to 24 hours was selected. The initial sample included all four surveys and totaled 9,187 youths between the ages of 12 to 19 years. The number of subjects that provided fasting blood samples totaled 3,733. Youth who reported pregnancy, had a positive urine pregnancy test, or who were missing data were excluded from this total, for a final study sample of 3,125 youth ages 12-19 years. Classifications of race were made including non-Hispanic white, non-Hispanic black, and Hispanic. Classifications for serum low-density lipoprotein cholesterol levels (LDL-C), high-density lipoprotein cholesterol levels (HDL-C), and triglycerides were made according to the National Cholesterol Education Program and the American Heart Association cutoff points. The participants for the lipid screening were chosen based on BMI percentiles, as established by the American Academy of Pediatrics (AAP) screening guidelines. Based on this measurement 32% of the youths qualified for the lipid screening. Lifestyle counseling eligibility was determined by using the AAP screening guidelines and patient lipid levels. Based on these guidelines, 22.3% of overweight youths and 42.9% of obese youths were candidates for counseling (CDC, 2010).

Researchers identified the presence of at least one abnormal LDL-C, HDL-C or triglyceride level in 1/5 of all youths, and a 43% prevalence rate in obese youths. There was a higher prevalence of abnormal levels in both overweight and obese youths. The researchers found a lower HDL-C in boys than in girls, and in youths aged 18-19 years than in youth ages 12-13 years. There was minimal difference in the LDL-C across the study. There was also a higher prevalence of low HDL-C and high triglycerides in non-Hispanic white youths when

compared to non-Hispanic black youths. The researchers concluded that a higher BMI was associated with abnormal lipid levels in youth ages 12 to 19 years in the U.S. (CDC, 2010).

Strengths of this study included the use of recommendations from the American Academy of Pediatrics and the American Heart Association for determining eligibility and cutoff points for abnormal lipids and BMI classifications. The use of random selection and a continuous cross-sectional design increased validity and decreased sample bias (CDC, 2010).

A major weakness of the study was the lack of familial history of the participants. The participants were chosen based on BMI cut-off points alone to show a relationship between elevated BMI and abnormal lipid levels in the U.S. youths. The sample was not adequate to determine risk factors other than elevated BMI for abnormal lipid levels without a complete medical, social and family history. This lack of history may have excluded other high-risk participants from the study (CDC, 2010).

Management

In the management of childhood obesity, research has shown that childhood obesity is an illness that must be treated in a multi-faceted manner. The options for treatment become more complex during the childhood years, and it is imperative to choose treatment that is both age-appropriate and effective.

Waters et al. (2011) performed a quantitative study evaluating the effectiveness of specific interventions in childhood obesity. The researchers sought the answer to the questions, "What works for whom, why, and for what cost?" They sought to learn the effect of dietary educational interventions and physical activity on changes in BMI, prevalence of obesity, rate of weight gain and other outcomes among children under 18 years. The researchers reviewed 39 articles from the review from 2004-2009. Twenty of these studies evaluated a combination of

diet and physical activity. Twelve studies targeted only the effects of physical activity and six studies only evaluated dietary interventions.

Waters et al. (2011) collected data using a data extraction form that they developed based on the Effective Public Health Practice Project Quality Assessment Tool for quantitative studies. The targeted age groups were divided into three categories: 0-5 years, 6-12 years and 13-18 years. Results were summarized according to measures of adiposity, behavioral, and unintended effects. The data were extracted from controlled trials to prevent obesity in children. These studies had a minimum duration of 12 weeks.

Interventions in the studies were aimed at educational, health promotion, and behavioral modification management strategies. Interventions took place within the community, school, after school care facilities, home, and nurseries. Waters et al. (2011) found strong evidence supporting the hypothesis that obesity prevention interventions in children can be effective and safe as long as the potential occurrences of unhealthy practices are monitored. The researchers recommended a combination of approaches to prevent obesity, particularly in those children ages six to 12 years. School interventions included integrating a curriculum on healthy eating, physical activity and body image, and improved nutritional quality of foods made available to students. Families were encouraged to support activities in the home to prompt children to be more active, eat nutritious foods, and spend less time in screen-based activities. Education of parents and children was crucial in both prevention and management. Treatment included a calorie-restricted diet, increase in physical activity, medications, behavioral therapy, surgical interventions, or any combination of these (Waters et al., 2011).

Oude et al. (2009) assessed the efficacy of interventions designed to treat obesity in children and adolescents. The researchers reviewed randomized control studies pulled from

electronic databases. Trials included children less than 18 years of age at the initiation of the intervention, excluding pregnant females and the critically ill, as well as children with obesity due to another illness. Interventions included lifestyle modifications (dietary, physical activity and/or behavioral therapy interventions), drug (orlistat, metformin, sibutramine, rimonabant), and surgical interventions such as gastric bypass or banding.

The researchers found that the addition of behavioral lifestyle interventions produced a significant reduction in overweight children and adolescents. The use of orlistat, or sibutramine, in addition to lifestyle interventions has shown to be effective. The risks of possible adverse effects versus the benefits of the treatment were weighed. Surgical interventions were included in this study, however, the amount of data regarding surgical treatment of the pediatric population were limited. The researchers recommended that dietary modifications and increased physical should be the first line treatment. They revealed the importance of educating parents and children on proper diet and appropriate levels of physical activity (Oude, et al., 2009).

Obesity is often accompanied by co-morbid conditions such as diabetes and cardiovascular disease. Seeger, et al. (2011) performed a quantitative study seeking to discover if regular exercise improves physical fitness and vascular function in children with Type I diabetes mellitus (DM1). It was expected that exercise training would improve endothelial function and decrease vascular wall thickness in the children being studied. The study included children between the ages of 8 and 12 who had a mean duration of DM1 of 2.7 ± 3.1 years. The participants were recruited from the Children Diabetes Centre in the Netherlands. Children with DM1 and cardiovascular pathology, mental retardation, and contraindications for physical exercise were excluded in the study. The subjects participated in a training program that consisted of running twice a week for 18 weeks. Data were collected on two occasions before

and after the 18-week exercise program. On the first visit, body characteristics including height, weight and waist circumference were measured, followed by a maximal running test. On the second visit, vascular measurements including brachial artery endothelial function and carotid artery wall thickness were performed.

The primary result of this study was that an 18-week exercise-training program, including two exercise sessions per week, effectively improved physical fitness and endothelial function in children with DM1. The improvement in brachial artery endothelial function after exercise training in children with DM1 suggested that exercise training decreased the risk for future cardiovascular disease (Seeger, et al., 2011).

Seeger, et al. (2011) showed the importance of physical activity in the daily management of children with DM1 to prevent future cardiovascular comorbidities. Many obese children seen by clinicians presented with co-morbid conditions such as diabetes mellitus and cardiovascular disease. Physical activity was most important in the treatment of the obesity itself and the comorbid conditions that accompany it.

Socioeconomic Influences

Management of childhood obesity involves interventions from the client, the parents, and the professional caregiver. Confrontation of this disease begins with a thorough assessment of the client's behaviors, activities, and environment. Research indicated that there are complex relationships between race/ethnicity, culture, socioeconomic variables, and childhood obesity. Family support is a universal common denominator that is paramount in the prevention and treatment of this global epidemic. Research suggests that socioeconomic status, race and a child's environment or culture might influence the risk and prevalence of childhood obesity. Geographical areas, diversity of populations and public policy may also compound the risk of

obesity in children. Due to the growing number of obese children in the United States, researchers are beginning to study dependent variables that can contribute to this growing problem.

Caprio et al. (2008) examined the socioeconomic variables that could affect childhood obesity. The researchers defined obesity as having a BMI at or higher than the 95th percentile for the child's age and gender. The authors stated that the prevalence of childhood obesity is higher in non-Caucasian populations. Five questions were asked to a panel of seven experts while convened at a conference held by Shaping America's Health in September 2008. These experts came from a variety of specialties and were asked to present information that would help in addressing awareness in this problem. The influence of race, ethnicity and culture in regard to childhood obesity were considered. These following questions were asked in an effort to reveal the socioeconomic relativity to childhood obesity:

1) "What are the prevalence, severity, and consequences of childhood obesity across races in the United States?"
2) "What are the socioeconomic factors associated with childhood obesity?"
3) "What are the biological and cultural factors associated with race or ethnic differences in childhood obesity? "
4) "What are the implications of race or ethnicity on the prevention of childhood obesity?"
5) "What are the implications of race or ethnicity on the treatment of childhood obesity?" (Caprio et al., 2008).

The first question was prefaced by discussing metabolic complications related to childhood obesity. The authors stated that there are approximately 110 million overweight or

obese children in the world. This problem held true in some developing countries as well. The researchers suggested that the childhood obesity epidemic began in the 1980's. The prevalence of childhood obesity in the United States has increased in both genders and in all populations of social groups, and has even tripled since 1980 in some age groups. In 2004, the percentage of obese children was 17% with the highest prevalence in Native Americans, African-Americans, and Mexican Americans. This study stated that the prevalence of obesity among races is shifting because of the increase in Caucasian obese children (Caprio et al., 2008).

Caprio et al. (2008) offered other factors that can contribute to childhood obesity. Pubertal maturation can contribute to obesity in that young girls that mature earlier tend to have increased body mass indices. According to this study, young African-American girls undergo pubertal maturation sooner than Caucasian girls, which contributed to the change between the two races. Severity of obesity among races varied. African-American children had the highest rate of severity.

The risks for disease included cardiovascular disease, diabetes, dyslipidemia, hypertension, inflammation, obstructive lung disease, fatty liver, musculoskeletal problems, ovarian disease, and chronic kidney disease. The psychological impacts of childhood obesity lead to isolation, poor school performance, and poor self-image. Childhood obesity predisposed adults to weight problems, and could have negative impacts on the quality of life in all ethnic groups and populations (Caprio et al., 2008).

Caprio et al. (2008) stated that socioeconomic factors could have a profound impact on childhood obesity, yet there are conflicting ideas on their connection. Stratification is the unequal distribution of privileges among subgroups in a population. Whites were said to have more accumulated resources than African-Americans, which could have accounted for less

accessibility to healthy life style choices for black children. Education may also be a factor that indirectly affects childhood obesity. Social class, capital, and context were found to be rarely included in data collection regarding diet and nutrition; therefore, these variables can only infer contribution to obesity in children. Lack of funds in any given household may allow for only the purchase of cheaper foods with higher caloric content and lower nutrient density. Childhood obesity could be influenced more by poverty than by race and can vary in geographical location. A child's place of residence could offer information regarding the complexities between the associations of economics.

Parental time spent with children may influence children's weights. The decline of jobs could cause mothers to leave the home to join the workforce. This could cause families to take alternative routes for food. Families may turn to convenience foods and unhealthy snacks instead of meals. Parents may be forced to choose between working for income and spending time with family (Caprio et al., 2008).

Caprio et al. (2008) addressed biological and cultural factors that may affect childhood obesity. Stress had a direct influence on a child's weight through plasma cortisol, environmental stressors, or inadequate cultural coping mechanisms. The relationships between genetics and childhood obesity were uncertain. Metabolisms may vary between races and racial/ethnic groups, as may fat distribution. The researchers found that African-American people had more visceral and hepatic fat than Caucasian or Hispanic groups. Hispanics and African-Americans had lower insulin sensitivity than Caucasian, making these populations more at risk for diabetes. The researchers stated that the relationships between biological dynamics and childhood obesity are only circumstantial and not definitive.

Caprio et al. (2008) defined culture as being a set of rules that determine the way in which a group of people live and consider normal. Obesity can be a fundamental part of a society and therefore could be influenced by culture. Culture may determine lifestyle choices such as poor eating practices and sedentary activities rather than physical. Culture variation may be maintained by segregation, migration, and language. Globalization (moving from one area to another), and acculturation (changes in cultural patterns) can affect obesity. Culture was thought to help form body image. Changes in culture may negatively impact nutrition choices and activity levels. The researchers discussed cultural preferences of mothers' weights in comparison to their children. Variables in cultures may influence feeding practices, food choices, and food preparations. There was a difference detected in how cultures identify healthy foods and non-healthy foods. These choices could affect the exposure to nutritional foods (Caprio et al, 2008).

Caprio et al. (2008) stated that physical activity is often modeled by parents. There were variations in race. African-American adolescents had a greater decline in activity with an increase in age in comparison to Caucasian children. Some Latino mothers felt that their obese children were healthy, and were unimpressed with their children's weights. Low-income societies were accepting of larger sizes while higher income societies endorsed smaller sizes. The experts suggested numerous ways to prevent obesity in children. They stated that conventional approaches to reduce this epidemic should include knowledge transfer, peer support, support of social norms, and private and public interventions. Physical exercise should be promoted over sedentary lifestyles. Healthcare providers should routinely monitor and discuss risks associated with obesity. Culturally appropriate behavioral improvements should be adopted. The researchers stated that the risk for obesity began in the prenatal period. Low birth

weights and gestational diabetes of mothers may increase the risk for childhood obesity, while breast-feeding may reduce the risks. Evidence suggested that minority mothers may succeed with breast-feeding if encouraged and supported. Food habits are established early in life, therefore, parents should promote appropriate food intake. Healthcare providers should educate parents of all races on caloric values and nutritional needs of children while encouraging physical activity and social interactions.

According to Caprio et al. (2008), healthcare providers should take in to account a child's race and ethnicity background while considering the total socioeconomic structure of the child's environment when assessing obesity. This includes, but is not limited to; family, community, relationships, biological variables, and interactions within their daily lives, such as physical activities. School is an environment that should be evaluated when studying the implications of obesity. Studies have been performed to uncover whether school programs have aided in childhood obesity prevention. The results were mixed.

One barrier identified by the researchers was that most grade schools (primary, middle and secondary) did not provide the recommended sixty-minute exercise program, while thirty-minute programs were found in some. There are schools that are supplied by the National School Lunch Program, which utilizes donated foods from the USDA. These foods are often high in fat. Federal regulations mandate the meals meet some nutritional standards. Fresh fruits were offered in only half of the participating programs. Children fed by this program were mainly minorities and residents of low socioeconomic status (SES) areas, which received one third of the daily caloric intake at school. That percentage increased to three fifths if the school served breakfast. The effectiveness of this program was undermined by poor snack choices such

as drinks containing high contents of sugar through vending companies and brand name fast-food items (Caprio et al., 2008).

Caprio et al. (2008) recommended that leaders such as school officials, community planners, and community business owners reevaluate their programs or services to promote wellness and obesity prevention for their children. Community planners could promote wellness by providing programs that encourage outside activities that include walking to school and playing outside. Reevaluation of community safety would enhance participation. Healthcare providers should assume the role of advocate by getting involved in the planning and creation of these programs.

Caprio et al. (2008) recommended a strategy of prevention to include early awareness of children that are at risk for long-term obesity. After identification of the risk has been made, goals are created and shared between the patient, the parents, and the provider for modification of habits. Goals should be realistic, motivational, and culturally tailored. These goals should include diet structure, caloric counts, and gender specific physical activities while considering affordability to the family. The researchers concluded that Hispanic children are more likely not to have insurance than African-American children, and African-American children are more likely than Caucasian children not to have insurance. Family support is paramount for success in lifestyle changes for all races. The majority of evidence that supported positive outcomes with family support has been from intact Caucasian middle class participants with mild to moderate obese children. Studies are now being performed that focus on Hispanic and African-American families (Caprio et al., 2008).

Two labeled medications that are used to treat adolescents for weight loss are Sibutramine (which inhibits reuptake of norepinephrine), and serotonin (which is given to

children that are sixteen years of age or older). Potential side effects include tachycardia, and hypertension. Orlistat, another medication that may be considered, is an inhibitor of fat absorption. This medication can be given to children twelve and older. Cost to the family, potential side effects, and naivety of long-term efficacy has deterred their use. Metformin is a medication used "off label" for childhood obesity. Metformin's primary purpose is for related illnesses to obesity such as increased androgens and increased glucose levels. Studies regarding medication successes have not been culturally diversified. Researchers have shown that Caucasian adolescent children have better results than do black children. This may be due to variations of metabolic processes (Caprio et al., 2008).

Caprio et al. (2008) offered suggestions to combat obesity for all races. They suggested that more research needs to be performed that include geographical area, culture, communities, and public policies. Diversity of the involved population should be considered. Treatment strategies should be reviewed and restructured to accommodate the individual races of obese children. This will help healthcare providers effectively provide customized care for each individual client that is culturally, biologically, and environmentally specific. Caprio et al., (2008) suggested that further research should focus on the barriers of strategies for care such as lack of insurance, predicted lifetime costs for treatment, and quality of life affected by the disease processes of childhood obesity.

Arcan et al. (2012) conducted a study that illustrated the level of concern of American Indian (AI) parents for the weight of their kindergarten-aged children. The participants of this study lived on a reservation in South Dakota between the years of 2005 and 2006. Arcan (2012) suggested that a child's weight was affected by the child's environment, and that parental involvement was necessary for obesity prevention. The information in this study was collected

by means of an obesity trial program called Bright Star. The study utilized information gathered from 413 parent-child pairs. Age, sex and Body Mass Index were categorized. Parents and caregivers reported their assessments of their children using a collection tool of multiple questions. Parental concerns and socio-demographics were also collected. A mixed-model multivariable analysis was used to study the relations between socio-demographic details and the likelihood of parents accurately classifying their child's weight status.

Arcan et al. (2012) discovered that the prevalence of obese children was higher in ethnic minorities throughout the United States. Observations of American Indian children from 1955 through 1997 revealed 41% of the total population as being obese. In 2007, 33% of the AI adults were obese which was 1.3 times higher than non-Hispanic Caucasian adults. Type 2 diabetes was found to be growing with these numbers.

Arcan et al. (2012) stated that those who take care of children might prevent obesity by taking control of the children's environment through awareness of eating behaviors and physical activity. Genetics and daily rituals should be recognized as risk factors by parents as well. The risk of adult obesity increased to 70 % when obese children had obese parents. Parents are often unable to accurately identify their own weight status, which in turn, causes error in assessing weight classifications for their children. Attitudes of parents were thought to enhance preventative measures.

The Bright Star study was a group randomized, control trial. This intervention was to help aid in weight reduction by encouraging improved diets and increased physical activity for the AI residents. A cross-sectional analysis of the data collected in the fall of 2005 and 2006 was used to assign participants to control groups and interventions. The trial was conducted in 14 schools. Half of the schools were assigned to interventions and the other half was assigned to the

control group. Correlations between students from the same school were observed though cluster design. The percentage of parents that gave consent to participate was 97%. Baselines were taken on 454 children out of the 472 children chosen. The parental number that participated and completed the survey was 413. Collected data included their dietary and physical activities as well. The children and parents' weights were taken in kilograms. All participants wore light clothing while being weighed. Their heights were measured by using a portable stand-o-meter. These measurements were collected by trained representatives. Body Mass Index (BMI) was calculated by dividing the weight by the height in meters squared. BMI results were assigned by using the BMI percentiles growth chart published by the Centers of Disease Control in 2000 (Arcan et al., 2012).

The survey questions asked the parents to rank their child's weight. The answers graduated from very underweight to very overweight. Height and weight of their children were unknown to most of the parents. Eleven categories of parental-child relationship descriptions were utilized. Categories for concern about the child's weight were graduated from not concerned to very concerned. Socio-economic statuses were measured by income. Salary categories ranged from $15, 000 annually to above $35,000 annually. The risk of obesity was found to be related to poverty level income status (Arcan et al., 2012).

The researchers analyzed the parents' probability of error in misclassifying their child's weight status. The outcome variable was calculated by subtracting the correct BMI categorical weight from the parents chosen categorical choice. A negative number represented under-classification while a positive number reflected an over-classification. The data were analyzed using a mixed-model analysis to look at the cross sectional relationships between parental error

while observing socio-economic factors. All answers to the questions were incorporated into the model (Arcan et al., 2012).

The results taken from the 413 pairs (parents-child) were as follows: 51% were male children, 89 % of parents were female, the standard deviation was 5.8 yrs. of age for the children, and the mean of parental age was 35.6. The study found that 29% of the children were overweight or obese, and 86% of the parents were overweight or obese. The mean BMI was 32.5 for the parents. Of the parents, 246 were correct in estimating the BMI of their child. Results also revealed that 138 underestimated while 29 overestimated their child's weight. The study found that 90% of the overweight parents and 46% of parents of obese children guessed their child's weight correct. Females were correctly classified more so than males. Eight of the parents of extremely obese children were very concerned, while half were not concerned. After assessing the child's weight, 75% were very concerned with their overweight child while 79% were slightly concerned with a slightly overweight child (Arcan et al., 2012).

Arcan et al. (2102) found that parents did not know their child weight status regardless of race. The researchers discovered only 6.3 % of the parents correctly classified their child's weight. Only four parents of the 413 in the study perceived their child as very overweight. The researchers suggested that parents only see their child's weight as an issue when the child is very obese and when the child is in the underweight percentile. They also suggested that overweight parents are more forgiving and are less apt to worry about a child's obesity than normal weight parents. Families that make more money are more likely to under classify their child's weight and are more accepting of obesity, as it indicates increased food accessibility. Lower educated parents may be associated with not recognizing obesity as problem for their children. Arcan et al. (2012) reiterated the importance of family actively recognizing obesity, and its risk factors, as

well as, the socio-economic influences that contribute to their child's weight. Arcan et al. (2012) encouraged parents and caregivers to do what they can to change their child's environment to prevent their child from being overweight or obese.

Martinson, McLanahan, and Brooks-Gunn (2012) compared the differences among native (persons born in that region) and ethnic overweight children in the United States and England. This cohort study was performed because of the likenesses of cultures, social status, and rapid increase of obesity populations between the two countries. Racial groups were also similar. The range of ethic subgroups in England was larger than the United States, which allowed the researchers to unfold patterns that could be generalized in the United States. The researchers found that childhood obesity is an increasing problem in prosperous countries, with inequalities between obesity, race, and socioeconomic position. The questions addressed by Martinson et al. (2012) were:

1) Is there an association between race/ethnicity of immigrants and childhood obesity?
2) Is socioeconomic status related to childhood obesity regardless of race?
3) Is there an association of the immigrant's maternal age?
4) Is there an association of the mother's weight, the child's weight, and ethnicity?

The researchers showed that of the children in the United States, African-American, Latino and poor children make up the majority of obese children, and that obesity may vary by origin. For example, Hispanics that migrate to the United States are found to have lower rates of obesity than native Hispanics. Immigrant groups of the United States and England tend to have lower social statuses and differ within subgroups when compared to each other (Martinson et al., 2012).

Martinson et al. (2012) discussed a complex relationship between income, education level of the parents, and childhood obesity. More income may allow for the purchase of excess food that is not healthy. Inversely, more money may allow for the purchase of more healthy foods and may provide for a safer environment. Mothers with low educational levels may be more adaptive of cultural meal planning, which may be a protective mechanism. Mothers from different countries may have different discernments of healthy eating and exercise habits. Immigrant children of high-income families and high educational levels are at a higher risk of obesity, especially if the mothers were born into an impoverished country. Native-born Caucasian children born to parents with low incomes and low-level education are more prone to obesity (Martinson et al., 2012)

Due to the improved awareness of wellness in the United States and England, immigrants that practice healthy lifestyles that have migrated as adults will be at an advantage more so than those that migrated as children. There are inconsistent data on mothers' ages at migration and the correlation of childhood obesity. The risk for obesity was reduced when the mother migrated at an older age. A mother's BMI and a child's weight are associated through genetics, culture and lifestyle practices thus, creating a relationship between race and nativity status. Maternal obesity is highly related to all subgroups and coincides with race and nativity differences (Martinson et al., 2012).

Martinson et al. (2012) compared results from the Fragile Families and Child Wellbeing Study (FFS) performed in the United States, and the Millennium Cohort Study (MCS) performed in England. In the FFS study, longitudinal information on children from birth to middle school age along with family information was collected. The results were based on probability using children born between the years of 1998 and 2000. Graduated interviews were conducted with

the parents at age one, three, five and nine years old of the child. The sampling, time frames, and age of follow-up allowed for easy comparison. The FFS study followed 4898 urban children, oversamples of children born out of wedlock, and included a large minority mix. The comparisons were based on 2930 participants from the FFS study.

The MCS is a national study of 18,818 children from the United Kingdom. The years of birth were from 2000 and 2002. Data collection procedures were similar in the MCS as in the FFS study. Graduated ages were utilized, and interviews were conducted at three, five and seven years of age. Oversamples of disadvantaged areas and high volumes of minority residents were included in the data. Scotland, Wales, and Northern Ireland were included due to the low number of non-white participants. A final sample of 6816 was used (Martinson et al., 2012).

Measures in the studies included weight, nativity and ethic race, age at arrival, socioeconomic status, and various control variables. Body Mass Index (BMI), height, and weight were taken from children ages three years old and nine years old from the United States population, and from children three years old and seven years old from the England sample. Centers for Disease and Preventions (CDC) guidelines were used to calculate BMI. The native country of the mother was collected. Four categories were used to describe the mother's ethnicity for the United States and six categories were used for the English survey. The ages of the mothers upon entering the U.S. and England were recorded. Divisions to categorize the mothers were seventeen and younger or eighteen or older. Eighteen was the cut-off age due to the estimation of discontinuance of dependency. The mothers' incomes and educational levels were used to estimate socioeconomic status. Those with a high school diploma or less were in the low educational category while those with college were placed in the high educational category for the U.S. participants. Choices for the England mothers were based on O-levels and

A-levels. Those that completed O-levels were considered to be in the low educational category and those in the high educational category had completed the A-levels. Indicators of financial income were measured as a percentage of income distribution. Those in the bottom 30% were considered poor for England participants and in the bottom 50% were poor for U.S. citizens. Measurements of the data tool were adjusted to family size. Income and education status were continuously measured. Other demographics collected included gender (of the children), marital status of the mother, age of the child, birth weight of the child, and number of pregnancies of the mother (Martinson et al., 2012).

Comparative results were remarkable for variations by race and nativity for both countries. The United States results for children of three years of age revealed equal risk of obesity compared to England. Latino children born to native mothers were of a higher risk of becoming obese than Caucasian as were Latino children born to those of foreign descent. Nine year old Latino and African-American children are more likely to be overweight than white children. Little differences were found within the nativity status of mothers within Hispanic populations. Statistics for three year olds reveal that Asians are less are less likely to be overweight than Caucasian. Black children born with foreign-born mothers are heavier than other subgroups. Statistics for children at age seven years revealed slightly different patterns of obesity. Whites and Asians are similar in weight patterns with native Asians being slightly heavier. Black children are heavier with both native-born mothers and foreign-born mothers. White populations weighed less in comparison to both (Martinson et al., 2012).

Data collected on the mothers revealed that obesity of mothers varied by race and nativity in the U.S. White mothers were less likely than both native born black and Hispanic mothers to be obese. Differences between foreign Hispanic and white mothers revealed small

differences, most in the nine-year age group. England statistics revealed that blacks were more likely to be heavier than other subgroups. Information of the age of the mother upon arrival to the country was not analyzed due to sample size restrictions. The U.S. income studies revealed that foreign-born were more likely to be poor than native people as were those of low educational levels in the United States. Native-born Asians and native-born blacks were similar to whites in England in regard to education, whereas low education was likely in Hispanics of the U.S. and in blacks and Asians of England (Martinson et al., 2012)

In regard to the first question, researchers identified that minorities were at a higher risk of obesity in most subgroups. Hispanic and black children of native-born mothers were at higher risk of obesity in the U. S. than native whites. Children born in England to black mothers were at a higher risk of obesity as were children of native-born mothers in some models. The hypothesis for question one was deemed partially true in that minority status as being a risk factor; however, immigrant status was not a protective variable as the results indicated black foreign mothers' risks increase the risks when compared to native-born black mothers (Martinson et al., 2012).

In regard to the second question, concerning socioeconomic status influence on the problem of obesity, researchers revealed that the socioeconomic status was different with whites and minorities. Low income and low education were protective mechanisms for black children and was similar with Hispanic children living in the U.S. It was identified as a protective mechanism in all subgroups in England. In contrast, high maternal incomes and education levels may not be protective with mothers from impoverished background (Martinson et al., 2012).

No support was identified for the third question regarding the age of immigration of the mother in either country. Limited support was found for the fourth question regarding maternal

obesity in association with minority status and childhood obesity. The results also revealed maternal obesity and family socioeconomic statuses being stronger in the U.S. for toddlers and school aged children than in England. Socioeconomic status was not proven a primary risk of obesity for non-Caucasian children. It was confirmed that there were race/ethnic differences in overweight children, and that immigrated mothers were not as likely to be protective against obesity. The researchers discerned that overweight and obesity causes were driven by many variables, and encourage future investigations and research regarding public policy and interventions (Martinson et al., 2012).

Summary

Review of the literature related to the screening, diagnosis, and treatment of childhood obesity, revealed an absence of clearly defined guidelines. Although healthcare providers play an important role in combating this epidemic, the duties of the health care provider are ill-defined. Evidence-based guidelines must be followed and culturally tailored so that the proper diagnosis and treatment may be offered to children in the earliest possible stage of this disease. Non-compliance with evidence-based practice guidelines may impair diagnosis of childhood obesity.

Prevention of childhood obesity is essential in addressing this alarming epidemic. Childhood obesity was found to be a multi-factorial disease in which biological, environmental, and socioeconomic influences greatly impact its prevalence. Family perceptions of obesity and their commitment to change are crucial to the successful management of childhood obesity.

Orem's Self-Care theory promotes the identification of self-care needs in vulnerable populations such as obese children. Self-care deficits in these populations should be directed toward parents. Providers may use Orem's theory to guide them in their responsibilities. Review

of the literature revealed childhood obesity as a worldwide epidemic. The prevalence of childhood obesity may result in an increase in adulthood obesity complications. The early identification of childhood obesity and its comorbidities with evidence-based practice guidelines may result in a significant reduction in cardiovascular disease, kidney disease, cancer, dyslipidemia, diabetes, hypertension, poor self-regard, and death related to obesity.

CHAPTER 3

Methodology

Introduction

To prevent future incidences of childhood obesity, and to protect those currently diagnosed from developing comorbidities such as hypertension, diabetes, and dyslipidemia, compliance with evidence-based guidelines for the screening, diagnosis, and treatment of childhood obesity must improve. Due to the lack of data regarding compliance with these guidelines, the researchers of this study investigated recommendations from multiple sources regarding the care of obese children. Guidelines from such pediatric care experts as the American Academy of Pediatrics and the Centers for Disease Control and Prevention were used to investigate the use of these guidelines in three separate Mississippi clinics providing care to pediatric patients. A quantitative, retrospective chart review was used for this research study. This design was deemed appropriate related to the use of quantifiable data recorded in patients' charts, convenience of the sample, and to the limited time frame for which to perform the study.

Protection of Human Subjects

Permission for a formal research was obtained from the Mississippi University for Women Institutional Review Board (see Appendix A). With approval of the proposed study, a Letter of Consent was sent to and obtained from the governing body of each of the three clinics chosen for the research study (see Appendix B). Once permission was obtained from the Institutional Review Board and the chosen clinics, the researchers utilized a collective sample of 300 charts meeting the age criteria of age 2 to 18 years, and having a diagnosis code of 278.02 or 278.00, or a Body Mass Index of 85th to 95th percentile for overweight or greater than 95th percentile for obesity, using CDC gender specific BMI-for-age growth charts. The medical

records chosen were from within the last five years of the data collection. The researchers used a retrospective chart review to gather data, therefore, there were no human subjects physically utilized in this study. Confidential information gathered from the charts were protected by the researchers by providing no identifiable information on the recorded worksheets and allowing documentation to be accessible to only the researchers. There were no risks or benefits to the subjects, related to the use of a retrospective chart review.

Population and Sample

This study was conducted in three Mississippi clinics that provided medical to pediatric patients. The target population of this study was children age 2 to 18 years of age in the United States. The accessible population consisted of the entire patient population in these clinics with the required age of age 2 to 18 years and having a diagnosis code of 278.02 or 278.00, or a Body Mass Index of 85th to 95th percentile for overweight or greater than 95th percentile for obesity, using CDC gender specific BMI-for-age growth charts. A collective sample of 300 charts was selected and reviewed for those meeting the age and diagnosis requirements.

Data Collection and Protection

A convenience sample of 300 charts meeting age and diagnosis criteria was compiled. The data were collected in a private area of the clinics. The data collected using the worksheet (Appendix C) was transferred and saved on a computer jump drive. The data were locked and stored in a secure location accessible to only the researchers. At the conclusion of the study, the jump drive was destroyed via incineration.

Instrumentation

A researcher designed data worksheet was used to gather the data during the chart review (see Appendix C). The data collection worksheet included demographic data, weight status,

identification of overweightness or obesity, treatment initiation, and provision of education. No modifications to the worksheet were made once the study commenced.

Data Analysis

The researchers used descriptive statistics to evaluate if primary care providers were using evidence-based guidelines to screen, diagnose, and treat childhood obesity. Data was first compiled in Microsoft Excel. Analyses using chi square comparisons were performed using Minitab statistical software, version 16. An alpha value of 0.05 was used to determine significance. Graphical summary were produced using Minitab and Microsoft Excel, version 2010, and demonstrated in the research project.

Summary

This study was a quantitative, retrospective chart review of 300 charts of patients' age 2 to 18 years, diagnosed with ICD-9 code of 278.02 or 278.00, or a calculated Body Mass Index of 85th to 95th percentile or greater than 95th percentile, using CDC gender specific BMI-for-age growth charts. Three Mississippi clinics providing care to pediatric patient in the United States were chosen for the setting. A data collection worksheet developed by the researchers was used to gather data while maintaining patient confidentiality and rights. The purpose of the study was determine if primary care providers of pediatric patients with childhood obesity are using evidence-based practice guidelines in the screening, diagnosis, and treatment of these patients and to offer the providers a quality improvement opportunity with adherence to evidence-based guidelines.

Chapter 4

Presentation of Findings

Introduction

The purpose of this study was to identify if health care providers were identifying, treating, and educating overweight and obese pediatric patients in Mississippi in accordance with the Centers for Disease Control and Prevention and the American Academy of Pediatrics guidelines. In addition, the researchers looked for a possible relationship between demographic and socioeconomic variables and childhood overweight and obesity in Mississippi.

Participant Characteristics

A convenience sample of 300 charts (n=300) was randomly selected that met the sample requirement of age 2 to 18 years and had a diagnosis code of 278.02 or 278.00, or a BMI of 85th to 95th percentile for overweight, or greater than 95th percentile for obesity. The data were collected from three separate Mississippi clinics providing pediatric health care. The charts were reviewed and data were collected that showed if providers were identifying, treating, and providing education for childhood overweight and obesity. Collected data was recorded using a data collection worksheet developed by the researchers (Appendix C). The sample included demographic data identified by gender, age, ethnicity, state of residence, and payer source. The sample also included height, weight, calculated BMI and, Centers for Disease Control and Prevention gender-specific BMI-for age Growth Chart percentile. Data were collected regarding provider identification of overweightness or obesity, initiation of treatment, and provision of parental or child education regarding childhood overweight or obesity.

The sample included data collected from the charts of 300 patients (136 male, 164 female) ranging in age from 2 to 18 years (M=11.32, SD 4.49). Regarding ethnicity, 40.33%

(n=121) of patients were reported as Caucasian, 53.00% (n=159) were African-American, 5.33% (n=16) were Hispanic, 0.33% (n=1) were Asian, and 1.00% (n=3) were some other ethnicity. Within in the 300 patient charts, 94.67% (n=284) were Mississippi residents, with the remaining 5.33% (n=16) of patients residing in Alabama. A large majority (65.67%; n=197) of patients listed state funding as the payer source, followed by private payer source (31.33%; n=94), and then no payer source (3.00%; n=9). The sample included actual calculated BMI of each patient and their subsequent CDC BMI growth chart percentile. A table was developed to display a summary of the demographic variables (Table 1).

Demographic Variable	Mean	Standard Deviation	Minimum	Maximum
Age (years)	11.32	4.49	2.00	18.00
Height (inches)	57.99	9.85	28.00	74.00
Weight (pounds)	143.29	63.88	20.00	327.00
BMI	27.96	5.89	16.90	44.20
Growth Chart (%)	96.33	3.96	68.00	100.00

Table 1. A summary of the demographic variables.

A histogram was developed to display the frequency of calculated BMIs among the sample charts (Figure 1).

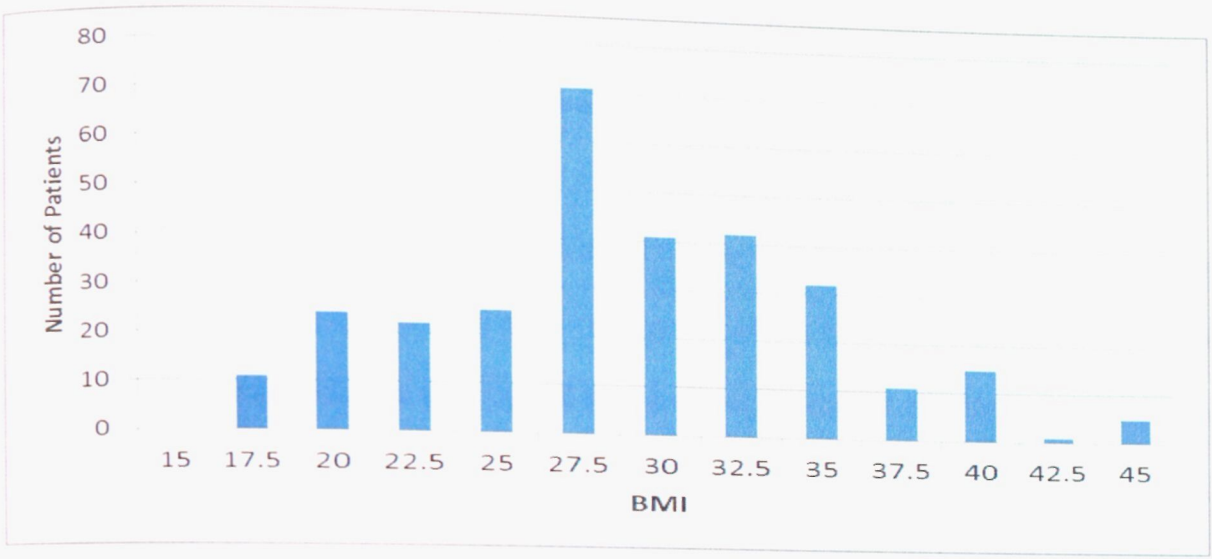

Figure 1. A histogram of calculated BMIs.

A historgram was developed to display the frequency of CDC BMI Growth Chart Percentiles among the sample charts (Figure 2).

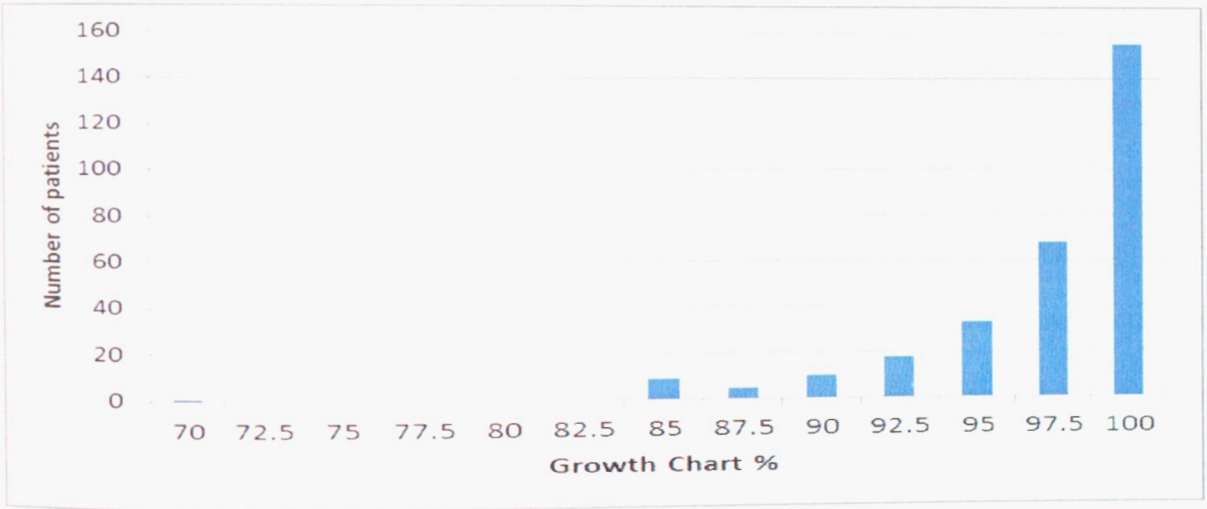

Figure 2. A histogram of CDC BMI Growth Chart Percentiles.

The focus of this study was to answer three separate research questions. The researchers questioned if providers identified overweight or obesity during the initial visit of the patient using calculated BMI and CDC BMI Growth Chart percentiles. They identified if providers

treated the child for overweight or obesity, and if education was provided to the patient or parent/caregiver regarding overweight and obesity.

Findings

Regarding the first question of identification of overweight or obesity, of the 300 charts studied, 35.00% (n=105) were identified as overweight or obese on their initial visit. Incidental data regarding ethnicity concluded that identification of overweight or obesity were significantly different. Identification was higher among African-American patients (51.57%) compared to Caucasion patients (11.57%) ($X^2(2, N=300)=49.271$, $p<0.001$). Other ethnicities not included in the data collection worksheet were identified as overweight or obese at 45.00% rate of occurance. Significantly fewer patients were classifed as overweight or obese when the payer source was State (23.35%) compared to private (56.38%), and no payer source (66.67%) ($X^2(2, N=300)=34.611$, $p<0.001$). There was no significant difference in identification based on gender ($X^2(1, N=300)=0.400$, $p<0.527$), whereas 36.59% of female patiens and 33.09% of male patients were identified as overweight or obese.

Regarding the second question of treatment initiation, treatment was initiated for 30.33% (n=91) of patients. As expected, treatment was initiated significantly more often for patients that were identified as overweight or obese (85.71%) compared to those not identified as overweight or obese (0.51%) ($X^2(1, N=300)=234.451$, $p<0.001$). Treatment was initiated at a significantly higher rate for African-American patients (50.94%) and other ethnicity patients (45.00%) as compared to Caucasion patients (0.83%) ($X^2(2, N=300)=83.840$, $p<0.001$). Significantly fewer patients with a State payer source had treatment initiated (19.29%) compared to private (50.00%) and no payer source (66.67%) ($X^2(2, N=300)=34.197$, p,0.001). There was no signifant

difference in initiation of treatment based on gender ($X^2(1, N=300)=0.100$, $p<0.0752$), whereas, 31.10% of female patients and 29.41% of male patients had treatment initiated.

Regarding question three, provision of education to the parent/caregiver or child, education was provided in 36.67% (n=107) of the patients. Eduation was provided at a significantly greater rate for patients identified as overweight or obese (99.05%) as compared to those that were not identified (1.54%) ($X^2(1, N=300)=282.810$, $p<0.001$). Patients who had treatment initiated also had a significantly higher rate of receiving education (100.00%) compared to those who did not have treatment initiated (7.66%) ($X^2(1, N=300)=235.608$, $p<0.001$). Education was provided at a significantly higher rate for African-American patients (52.20%) and other ethnicitiy patients (45.00%) as compared to Caucasion patients (12.40%) ($X2(2, N=300)=48.259$, $p<0.001$). Significantly fewer patients with a State payer source received education (24.87%) compared to private (55.32%) and no payer source (66.67%) ($X^2(2, N=300)=29.594$, $p<0.001$). There was no significant difference based on gender ($X^2(1, N=300)=0.721$, p=0.396), whereas, 37.80% of female patients and 33.09% of male patients received education.

Additional analyses revealed a significant difference in identification of overweight and obesity ($X^2(4, N=300)=56.952$, $p<0.001$), initiation of treatment ($X^2(4, N=300)=68.332$, $p<0.001$), and education provided ($X^2(4, N=300)=53.599$, $p<0.001$) based on age was found. The oldest age group (6-18) was most likely to receive all three outcomes. A histogram was developed to show the percentage of childhood obesity among the different age groups (Figure 3).

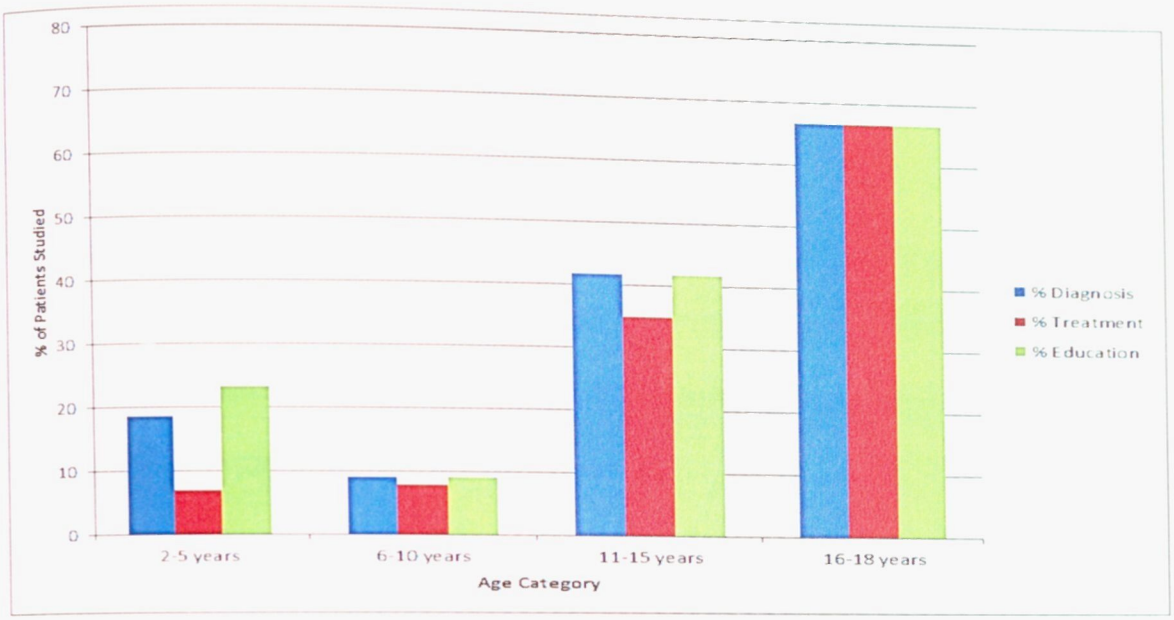

Figure 3. Percentage of occurrence based on age categorization.

Summary

The rate of occurrence for identification of overweight and obesity (35.00%), treatment (30.33%), and education (35.67%) of the 300 patient charts reviewed were extremely low. Based on the data, it was apparent that African-American patients and those with private payer source had significantly higher incidences for all three measures (identification, treatment, and education). There were also significant differences based on age. There were no significant differences based on gender.

Chapter V

Implications

Summary of the Investigation

The researchers found that a significantly low number of health care providers are using evidence-based guidelines in the screening, diagnosis, and treatment of childhood obesity. Relevant data were collected to identify correlations between demographic and socioeconomic variables and childhood overweight and obesity as well.

Interpretation of Findings and Conclusions

The researchers found a significant low number of pediatric health care providers identified childhood overweight and obesity on the initial patient visit. Contributing factors for such a low identification percentage may include, patient payer source for health care visits, provider time constraints for patient visits, reimbursement for overweight and obesity diagnosis, lack of assessment parameters for identifying childhood overweight and obesity (height, weight, BMI, and growth percentile), provider confidence in management of childhood overweight and obesity, and provider area of practice. The researchers found a higher incidence of childhood overweightness and obesity in African-Americans when compared to Caucasian patients and other ethnicities. The higher incidence in African-American may be related to cultural lifestyles, food choices, food preparation, and body image beliefs. Fewer children with State payer source were classified as overweight or obese, compared to those with private and no payer source related to providers lack of identification in populations with high State payer source.

Treatment initiation overall was significantly low for this population sample. However, it proved to be a higher percentage for African-American patients. This higher prevalence of treatment than in other ethnicities may be due to the higher incidence of childhood overweight

and obesity in African-Americans. Fever patients with State payer source had treatment initiated when compared to other payer sources. This difference in initiation may be due to a significant difference in the number of State payer source patients a provider may treat versus other payer sources, and the variability of the type of patients a provider my see, or the specialty of the provider.

The researchers found a higher incidence of education was provided for those patients identified as overweight and obese. Education was provided consistently when a patient was identified as being overweight or obese. There was a higher incidence of provision of education for African-Americans when compared with other ethnicities. This can be related to the higher incidence of overweight and obesity found in the African-American population. The incidence of education being provided in childhood overweightness and obesity was identified to be decreased in State payer source patients when compared to other payer sources. Variable that may affect the incidence of patient education may include visit time constraints, barriers to learning, willingness to learn, and lack of provider educational tools and preparedness.

Barlow (2007) concluded that there was a lack of consistency in the screening, diagnostic, and treatment guidelines for pediatric provider concerning childhood overweight and obesity. Barlow (2007) recommended professional committee guidelines in the screening, diagnosis and treatment of childhood overweight and obesity. These guidelines supported the used of calculated BMI and BMI-for-age-and-gender growth charts in the identification of childhood overweight and obesity. Growth chart percentiles were recommended as well as correlating management plans for each percentile, according to risk factors for complications related to overweight and obesity.

The present researchers demonstrated that although most providers calculated BMI, few addressed the BMI-for-age-and gender growth chart percentile in which the child fell (85th to 95th and greater than 95th percentile) regarding BMI. Therefore, a significantly lower number of providers successfully identified childhood overweight or obesity. There was a greater amount of inconsistency in identification of these patients. The researchers suggested that a lack of professional guidelines in the screening and diagnosis of childhood overweight and obesity could contribute to this inconsistency.

Regarding management and treatment, outcomes demonstrated that overall treatment initiation was low (30.33%). Waters et. al (2011) suggested a treatment regimen including a calorie-restricted diet, increase in physical activity, mediations, behavioral therapy, surgical intervention, or any combination of these interventions. Seeger et. al (2011) stated that childhood obesity if often accompanied by co-morbid conditions such as diabetes and cardiovascular disease. Without proper management of childhood overweight and obesity the risk of these co-morbid conditions is high, and should be addressed once overweight or obesity is identified. The lack of identification of childhood overweight and obesity correlated with the low percentage of treatment.

Caprio et. al (2008) examined the socioeconomic variable that could affect childhood obesity and confirmed a higher incidence of childhood obesity in African-American when compared to other ethnicities. The present researchers confirmed this conclusion with a 51.57% identification rate in African-Americans. Caprio et. al (2008) stated that culture may determine lifestyle choices such as poor eating habits and sedentary activity rather than physical. Caprio et. al (2008) stated that obesity can be a fundamental part of society and, therefore, can be influenced by culture. This could clarify the high amount of diversity between different

ethnicities in the population sample used in the research project. According to Caprio et. al (2008), healthcare providers should consider a child's race, ethnic background and socioeconomic status, and environment when assessing, treating, and educating overweight or obesity in a child. Data from this research project supports this statement, in that there was a high incidence of overweightness and obesity diversity amount certain ethnicities, payer sources, age, and gender.

Limitations

Limitations of this study included: 1) small sample size, 2) data were gathered from only three health care clinics providing pediatric care, 3) narrowing data collection to only patients with overweight or obesity, 4) time constraints of the research project, 5) lack of consistency in patient record accessibility, such as electronic vs. paper, 6) lack of quantitative studies concerning research topic, 7) lack of interest in providers in the identification, treatment, and education provision of childhood overweight and obesity, and 8) inconsistency in data collection among researchers, such as using ICD-9 codes and age range when ICD-(not available).

Implications and Recommendations

Orem's Self-Care theory was applicable to this research project in the prevention and treatment of childhood obesity, in that, it promotes the identification of self-care needs as early as possible. Orem's Self-Care theory acknowledges the provider's role in education and health promotion as a key variable in assisting children in meeting physical, emotional, and developmental milestones. Self-care practices are directed toward the parents/caregivers when addressing vulnerable populations, such as children, and should be fostered by providers as an essential role in success with overweight and obesity.

Childhood obesity is a growing health problem in the United States. Healthcare provider's compliance with national guidelines for the screening, diagnosis, and treatment of childhood obesity is essential to decrease its prevalence. Research revealed a great inconsistency among provider practice in the identification and management of childhood overweight and obesity. Further research is needed to guide providers in the most effective screening practices, assessment tools, and treatment plans. Increasing provider reimbursement for the diagnosis of overweight and obesity could increase identification of childhood overweight and obesity and prevent future complications associated with the disease process and future costs of health care related to it as well.

Effective and consistent assessment tools are essential to the Advanced Practice Nurse's role in identifying childhood overweight and obesity. The present researchers discovered that less than half of providers were documenting identification of childhood overweight and obesity, resulting in fewer treatment and education plans. The use of electronic medical records in practice that utilizes evidence-based guidelines, such as BMI-for-age and gender CDC Growth Charts, could streamline assessment, treatment plans, and education documentation for providers. The use of questionnaires as an added tool to address the psychological and emotional effects of childhood overweight and obesity, in age appropriate forms, could improve patient and provider insight into the most effective approaches.

Continuing education opportunities and active involvement in state and federal organizations may provide the Advanced Practice Nurse with advocacy tools necessary for improving childhood overweight and obesity outcomes. Advanced Practice Nurses should implement a culturally tailored management plan to ensure success. A thoroughly documented multidisciplinary management plan, including education for child and parent/caregiver promotes

definitive changes in lifestyle, behavioral, and social outcomes in obese children. Advanced Practice Nurses can only hope to improve these outcomes by ensuring professional evidence-based practice continuous education.

Advanced Practice Nurses are in a prime position to identify, treat, and prevent childhood obesity effectively. By considering their patients' psychological, social, cultural and ethnic needs and influences, a nurse practitioner can substantially impact the global effects of childhood overweight and obesity. As pioneers in the area of patient advocacy, Advanced Practice Nurses play a key role in improving community, state, and federal collaboration in the development of practice guidelines.

Summary

Obesity is a growing epidemic, which involves a complicated mixture of cultural influences, biological variables, and a diverse level of socioeconomic factors. Race/ethnic variability must be included in the plan of care in order to promote positive outcomes. Biological and metabolic complications such as insulin imbalance, genetic inheritance, physiological stages of growth, and psychological insults increase the risk of childhood obesity. These factors alone warrant prescriptive medications, therapeutic counseling, and collaborative care by healthcare providers. Socioeconomic factors such as resources for healthy life styles, educational levels of the client and family, available exercise modalities, and lack of family cohesion creates a stressful environment for the client and strongly promotes obesity in children.

Many activities enjoyed by children are performed indoors and seated. Children are sedentary most of the day at school as well. Many children receive most meals outside of the home, while parents who work often find it more convenient and cost efficient to prepare packaged foods or eat at restaurants. Even if the parent desires to make improvements to the

child's lifestyle, this proves difficult as employment responsibilities often leave children in the care of others for most of the day. It is therefore important that the health care providers reach out to community resources to find programs that will aid in increasing physical activity for children.

Health care providers possess the abilities to make a difference. They are armed with knowledge, skills, expertise, and access to resources that are needed to reduce the prevalence of childhood obesity. Health care providers need to embrace this problem and adopt childhood obesity as one of their platforms. Each encounter with their clients should be taken as an opportunity to screen, educate, and promote client wellness.

Health care providers should expand their interest and concern for childhood obesity by becoming active members in professional organizations. These organizations offer providers powerful influences for change through social, educational, and political means. Childhood obesity awareness should continue to be addressed on community, state, and federal levels. Healthcare providers should embrace their roles, utilize their talents, and acknowledge the significance of this problem.

References

Arcan, C., Hannan, P. J., Himes, J. H., Fulkerson, J. A., Holy Rock, B., Smyth, M., Story, M. (2012). American Indian parents' assessment of and concern about their kindergarten child's weight status, South Dakota, 2005-2006. *Preventing Chronic Disease* 2012; 9:110215.

Barlow, S. (2007, December). Expert Committee Recommendation Regarding the Prevention, Assessment, and Treatment of Child and Adolescent Overweight and Obesity: Summary Report. *Pediatrics*, 120, S164-S192. Retrieved September 20, 2012 from http://www.pediatrics.org.

Caprio, S., Daniels, S.R., Drewnowski, A., Kaufman, F. R., Palinkas, L.A., Rosenbloom, A.L., & Schwimmer, J.B. (2008). Influence of race, ethnicity, and culture on childhood obesity: Implications for prevention and treatment. *Diabetes Care*, 31, 2211-2221.

Centers for Disease Control and Prevention. (2010). Prevalence of abnormal lipid levels among youths-United States, 1999-2006. *Morbidity and Mortality Weekly Report, 59*, 29-33. Retrieved October 7, 2012 from http://www.cdc.gov/mmwr.html.

Centers for Disease Control and Prevention. (2011, January 21). CDC Grand Rounds: Childhood obesity in the United States. *Morbidity and Mortality Weekly Report, 60*, 42-46 Retrieved November 6, 2012 from http://www.cdc.gov/mmwr.html.

Centers for Disease Control and Prevention. (2012a). Adult Obesity Facts. Retrieved November, 6, 2012 from http://www.cdc.gov/obesity/data/adult.html.

Centers for Disease Control and Prevention. (2012b). Childhood Obesity Facts. Retrieved November 6, 2012 from http://www.cdc.gov/heatlhyyouth/obesity/facts.htm.

Centers for Disease Control and Prevention. (2012c). BMI-for age charts. Retrieved November 6, 2012 from http://www.cdc.gov/growthcharts/html_charts/bmiagerev.htm.

Childhood-Obesity. (2012). *American Academy of Pediatrics*. Retrieved September 19, 2012 from http://www2.aap.org/obesity/about.html.

Childhood Overweight. (2012). *American Academy of Pediatrics*. Retrieved December 17, 2012 from http://www2.aap.org/obesity/about.html.

Denyes, M., Orem, D.E., & Bekel, G. (2001). Self-Care: A Foundational Science. *Nursing Science Quarterly, 14*(1), 48.

Deroo, K. (2008). Childhood Obesity-An Educational Pamphlet. *D'Youville College*. Retrieved October 31, 2012, from http://www.scribd.com/doc/7848476/Obesity-Project-Main-Copy1.

Education. (2012). *Oxford Dictionaries Online*. Oxford University Press. Retrieved September 18, 2012 from http://oxfordictionaries.com/definition/english/education.

Finkelstein, E., Trogdon, J., Cohen, J.W., & Dietz, W. (2009). Annual Medical Spending Attributable To Obesity: Payer-and-service-specific estimates. *Health Affairs*, 28(5), 822-831.

Haas, D. (1990). Application of Orem's self-care deficit theory to the pediatric chronically ill population. *Issues In Comprehensive Pediatric Nursing*, *13*(4), 253-264. Retrieved October 23, 2012 from *Ebscohost* .

Health Care Provider. (2012). *Word Web Online*. Retrieved September 19, 2012 from http://www.wordwebonline.com.

Menifield, C., Doty, N., & Fletcher, A. (2008). Obesity in America. *ABNF Journal*, 19(3), 83-88.

Martinson, M. L., McLanahan, S. & Brooks-Gunn, J. (2012). Race/ethnic and nativity disparities in child overweight in the United States and England. *The Annals of the American Academy of Political and Social Science,* 643, 219. Retrieved November 1, 2012 from http://www.sagepublications.com.

Orem, D., & Taylor, S. (2011). Reflections on Nursing Practice Science: The Nature, the Structure, and the Foundation of Nursing Sciences. *Nursing Science Quarterly*, *24*(1), 35-41.

Oude Luttikhuis H., Baur, L., Jansen, H, Shewsbury, V.A., O'Malley, C., Stolk, R.P., & Summerbell, C.D. (2009). Interventions for treating obesity in children. Cochrane Database of Systemic Reviews, *2009*(3), 1-57. doi: 10.1002/14651858.CD001872.pub2.

Seeger, J.H., Thijssen, D.J., Noordam, K.K., Cranen, M.C., Hopman, M.E., & Nijhuis-van der Sanden, M.G. (2011). Exercise training improves physical fitness and vascular function in children with type 1 diabetes. *Diabetes, Obesity & Metabolism, 13*(4), 382-384.

Sorof, J., Lai, D., Turner, J., Poffenbarger, T., & Portman, R. (2004). Overweight, Ethnicity, and the Prevalence of Hypertension in School-Aged Children. *Pediatrics, 113*, 475-482. Retrieved October 5, 2012 from http://www.pediatrics.aappublications.org.

Treatment. (2009). Venes (ed.) *Taber's Cyclopedic Medical Dictionary* (pg. 2367, 21st ed.) Philadelphia: F.A. Davis Company.

United States Preventative Services Task Force. (2010). Screening for Obesity in Children and Adolescents: US Preventative Services Task Force Recommendation Statement. *Pediatrics*, 125, 361-367.

Waters, E., de Silva-Sanigorski A., Hall B. J., Brown, T., Campbell, K. J., Gao, Y., Armstrong, R., Prosser, L., & Summerbell, C. D. Interventions for preventing obesity in children. *Cochrane Database of Systematic Reviews, 2011*(12), doi: 10.1002/14651858.CD001871.pub3.

Wethington, H., Sherry, B, & Polhamus, B. (2011). Physician practices related to use of BMI-for-age and counseling for childhood obesity prevention. *BMC Family Practice, 12*(80). Retrieved November 9, 2012 from http://www.biomedcentral.com.

Appendix A

APPENDIX A

IRB APPROVAL

FORM A

MISSISSIPPI UNIVERSITY FOR WOMEN
INSTITUTIONAL REVIEW BOARD

IDENTIFICATION OF INVESTIGATORS AND BRIEF DESCRIPTION OF INVESTIGATORS AND BRIEF DESCRIPTION OF PROPOSED RESEARCH REVIEW

TITLE OF STUDY: Are Health Care Providers Following Evidence-Based Guidelines in the Screening, Diagnosis, and Treatment of Childhood Obesity?

PRINCIPAL
INVESTIGATOR: _____
(Signature)

DEPARTMENT: Graduate Nursing (Date) _____

RESEARCH ADVISOR: _____
(Signature)

Instructions: In the space below (use additional sheets where necessary):

1. Briefly describe the purpose and nature of the present research proposal. State what, if any, benefit is to be gained by the subject(s) or what information is to be added to the general body of knowledge as a result of this research.

Statement of Purpose

The purpose of this study is to determine if providers are following evidence-based guidelines for the screening, diagnosis and treatment of obese children. BMI, blood pressure, lipid levels and glucose levels aid in determining risk factors for the comorbidities associated with childhood obesity. A BMI measurement is recommended at each well-child visit. Socioeconomic factors associated with childhood obesity will be investigated to determine if such factors affect the prevalence of childhood obesity.

Significance of Study

According to the CDC, approximately 17% (12.5 million) of children and adolescents ages 2 to 19 years are obese. These statistics have tripled since 1980, a sign that past and present efforts have not improved the rates of childhood obesity. In 2011, the South had the highest prevalence of obesity in the United States, with Mississippi showing the highest at 34.9%. A definitive correlation has been shown between obesity and health conditions such as heart disease, stroke,

abetes and cancer. These health conditions are among the leading causes of death in the nited States. Currently, there is variation in the use of evidence-based guidelines in the reening, diagnosis, and treatment of childhood obesity. Further research into the compliance ith these guidelines and their impact on the outcomes of childhood obesity management may oduce a significant change in the use of evidence-based guidelines and the prevalence of ildhood obesity.

List all procedures to be used on human subjects with a description of those you nsider beyond already established and accepted techniques.

is study will be conducted by retrospective chart review and there will be no risk to the bjects as their medical information will have no patient identifiers and no actual physical ntact will be made.

Describe the necessary safeguards to be applied to protect the subject.

ne worksheet used to gather data will not contain any patient information including patient me, medical record number, birth date, or social security number. Charts will be kept out of ew in a separate area while data collection takes place. No patient identifiers or charts will be ken from the clinic. The Health Insurance Portability and Accountability Act (HIPPA) gulations will be maintained to protect patient confidentiality.

State whether or not you consider the subject to be "at risk." If you consider the subject be "at risk", in what respect do the potential benefits to the subject or contributions to e general body of knowledge outweigh the risks?

his study will be conducted by retrospective chart review. There will be no risk to the subjects s their medical information will have no patient identifiers and no actual physical contact.

If you consider the subject to be "at risk," state exactly what you tell him in lay nguage to obtain informed consent relative to each procedure wherein he is "at risk." his must be a form that is given or read to the subject particularly for this purpose. If ubjects are children what will be told to parent or legal guardian?

ot applicable as there will be no risk to subjects.

State from whom documentation of informed consent will be obtained.

mplementation of the project will include obtaining consent from the Mississippi University for Women Institutional Review Board and written permission from three separate pediatric clinics.

Attach copies of all questionnaires to be used.

FORM B

EVALUATION FORM FOR

INSTITUTIONAL REVIEW BOARD

Date Submitted to Committee: January 23, 2012

Title of Investigation: Are Health Care Providers Following Evidence-Based Guidelines for the Screening, Diagnosis, and Treatment of Childhood Obesity?

Principal Investigator: Alena Lester, Christian Allison, and Teresa Gail Harris

Funding Agency: None

Funding Agency Grant Number: (NIH, BEH, when applicable): Anticipated number of human subjects to be studied (when applicable): N/A

Projected duration of investigation: 3 months

Age range of human subjects: 2 to 18 years of age

Any mental or physical impairment present in the subjects: Unknown; chart review only

Criteria for subject selection: Convenience sampling of 300 charts with diagnosis code of 278.02 or 278.00 ages 2 to 18 years

Potential for beneficial effect to human subject arising from investigation: No potential benefits.

Potential adverse effects (psychological, behavioral and physiological) arising from investigation: There are no risks anticipated to participants recruited into this study.

Potential or established side effects of drugs used in investigation: N/A

Brief justification of research where immediate benefit to specific human subject is absent or unknown: N/A

For On-Going Investigations Only. Number of subjects studied: N/A

Documented adverse psychological, behavioral, physiological and pharmacological

ffects of study: N/A

Precautions used to detect, prevent, minimize or reverse adverse side effects: N/A

Change in methods or procedures (when applicable): N/A

Change in intent, direction or scope of research (when applicable): N/A

FORM C

SAMPLE OF INFORMED CONSENT
INSTITUTIONAL REVIEW BOARD

1. State exactly what you will tell subject, parent/guardian:

   This is a retrospective chart review, therefore, no physical contact will be made with any patient/guardian.

2. State how you will obtain documentation of informed consent. (Submit sample document).

   This study is a retrospective chart review and there will be no risk to the subjects as their medical information will have no patient identifiers and no actual physical contact will be made.

FORM D

GUIDELINES FOR THE PROTECTION OF HUMAN RIGHTS INSTITUTIONAL REVIEW BOARD

Review Form D
If "no" checked, please explain in writing and attach.

1. Right to Privacy YES / NO

1.1 Obtained free and informed voluntary written consent. _____ _____
1.2 Provide for anonymity _____ _____
1.3 Information obtained held in confidence _____ _____
1.4 When a reasonable possibility exists that others may obtain access to information, plans for protecting the confidentiality are explained to the subject. _____ _____

2. Right to Self-determination
2.1 Voluntary consent obtained without overt or covert coercion. _____ ----_____
2.2 Deception of subject or concealment of purpose avoided _____ _____
2.3 When concealment is necessary, it is communicated to the subject and a contract is made to inform the subject as the design permits. _____ _____
2.4 Explanations are not ambiguous and the terminology used is appropriate to the subjects level of understanding. _____ _____
2.5 Subject free to withdraw consent at any point and informed of such. _____ _____
2.6 Obtained third party written consent if necessary. _____ _____

3. Rights of Minors and Legally Incompetent Persons
3.1 If a minor, informed written consent from parents required and obtained. ____ ____
3.2 If legally incompetent, informed written consent from legal guardian required and obtained. ____ _____
3.3 Supplemental written consent obtained from minor when minor has capacity to comprehend implications of study. _____ _____

4. Right of Conservation of Personal Resources
4.1 Time, freedom from constraint, and personal resources are not abused. _____ _____
4.2 Subject is informed about the nature, extent, and possible consequences of study.
___ _____

5. Right to Freedom from Arbitrary Hurt 5.1 Subject protected from arbitrary mental and/or physical suffering as a result of study. _____ _____

6. Right to Freedom from Intrinsic Risk of Injury
6.1 Subject has full information about proposed investigation if there is a risk of emotional and/or physical injury. _____ _____

7. Additional Safeguards

1 Deviation from any of the above principles. _____ _____

2 Evidence demonstrated that appropriate expert advice has been received that it is acceptable to deviate. _____ _____

3 The researcher has demonstrated that research assistants have been, or will be trained in the ethics involved in carrying out the research design. _____ _____

_____ _____

Vice President for Academic Affairs Date

REFERENCE: ANA Ethical Guidelines APA Ethical Principles University of Michigan, Guidelines for the Protection of Human Rights University of Indiana, Guidelines for the Protection of Human Rights

FORM E

DEFINITIONS OF TERMS USED BY INSTITUTIONAL REVIEW BOARD

Investigator*:
A graduate student enrolled in or a faculty member who desires to conduct research with human rights who
1. Is representing himself/herself as a student or faculty member.

Research 1
Any organized research, research, potentially publishable to include theses and funded r esearch.

Subject 2
Any individual who may be "at risk" as a consequence of participation as a subject in research.

At Risk 2
Any individual is considered "at risk" if he may be exposed to harm physical, psychological, sociological, or other as a consequence of any activity which goes beyond the application of those established and accepted methods necessary to meet his needs.

Informed Consent 2
Informed consent is the agreement obtained from a subject, or from his authorized representative, to the subject's participation in an activity.

The basic elements of informed consent are:
1. A fair explanation of the procedures to be followed, including an identification of those which are experimental;
2. A description of the attendant discomforts and risks;
3. A description of the benefits to be expected;
4. A disclosure of appropriate alternative procedures that would be advantageous for the subject;
5. An offer to answer any inquiries concerning the procedures;
6. An instruction that the subject is free to withdraw his consent and to discontinue participation in the study or activity at any time.

*Any other person conduction research who desires human rights review by this Committee.

1- Mississippi University for Women Faculty Council, March 25, 1980.
2- United States Department of Health, Education, and Welfare: Policy on Protection of Human Subjects, 1971.

Appendix B

APPENDIX B
LETTER OF INFORMED CONSENT

To Whom it May Concern:

We are graduate students in the Family Nurse Practitioner program at Mississippi University for Women in Columbus, Mississippi. As a program requirement, we are conducting a retrospective chart review to assess compliance with evidence-bases practice guidelines for the screening, diagnosis, and treatment of childhood obesity. We will be collecting data regarding the use of these guidelines in patients age 2 to 18 years and having a recorded diagnosis code of V85.02 or 278.00, or a calculated Body Mass Index of 85th to 95th percentile for overweightness or greater than 95th percentile for obesity using CDC gender specific BMI-for-age growth charts. We are requesting permission to review medical records within your practice that meet these criteria. We are aware that we will need to maintain the confidentiality of all information collected from the medical records. We agree to undergo or consent to any HIPPA requirements set forth by your practice regarding patient privacy and confidentiality. The data collected from each chart will be recorded per a Data Collection Worksheet to be kept on a confidential electronic flash drive stored in a secure location, with access only to the researchers. At termination of the research project, this information will be destroyed by incineration of the drive, per HIPPA guidelines. No clinic or patient identifiers will be used in the study.

Your participation in this study is strictly voluntary. You may withdraw your consent and participation in this study at any time. The result of the study will be made available to you upon completion, and may have such beneficial use as a quality assurance measure for your practice.

If you have any questions concerning this study, please contact the following committee members: Alena Lester at (662) 299-2985, Teresa Gail Harris at (662) 255-7757, or Christian Allison at (662) 660-4188, or Dr. Johnnie Sue Wijewardane (committee chair) at (662) 329-7223.

Sincerely,

Alena Lester, Teresa Gail Harris, and Christian Allison

I have read the above letter of consent and agree to the utilization of this clinic for the above mentioned research project. I understand that HIPPA regulations will be strictly followed and the confidentiality of each chart chosen will be maintained. I also understand that the results of the study will be made available to me at the project's end.

Name, Title _____ Signature _____ Date _____

Appendix C

APPENDIX C

Data Collection Worksheet:

Gender	Age	Ethnicity	Ht.	Wt.	State	Payer Source

BMI	Growth Chart Percentile	Identified Overweight or Obesity	Initiated Treatment	Education Provided

Legend

1. Review number ___, Clinic number___
2. Gender___
3. Age___
4. Ethnicity (0) Caucasian/White___ (1) African American___, (2) Hispanic___, (3)Asian___, (4) Other___
5. Ht.___
6. Wt.___
7. State ___
8. Payer Source (0) None___, (1) Private___, (2) State___
9. BMI Measurement___
10. Growth Chart Percentile___
11. Identified Overweight or Obesity (0) Yes___, (1) No___

12. Treatment Initiated (0) Yes____, (1) No____

13. Education Provided (0) Yes____, (1) No____

Appendix D

APPENDIX D

Sample BMI-for-Age and Gender Growth Charts (CDC, 2012c)

s, 2-20 years

3rd Percentile BMI Value	5th Percentile BMI Value	10th Percentile BMI Value	25th Percentile BMI Value	50th Percentile BMI Value	75th Percentile BMI Value	85th Percentile BMI Value	90th Percentile BMI Value	95th Percentile BMI Value	97th Percentile BMI Value
14.14735	14.39787	14.80134	15.52808	16.4234	17.42746	18.01821	18.44139	19.10624	19.56411
14.13226	14.38019	14.77965	15.49976	16.38804	17.38582	17.97371	18.39526	19.05824	19.51534
14.0241	14.34527	14.73695	15.44422	16.31897	17.30485	17.88749	18.30611	18.96595	19.42198
14.07297	14.31097	14.69516	15.39015	16.25208	17.22693	17.80489	18.22103	18.87853	19.3341
14.04396	14.27728	14.65429	15.33754	16.18735	17.15202	17.72586	18.13997	18.79591	19.25163
14.01538	14.2442	14.61434	15.2864	16.12475	17.08009	17.65035	18.06285	18.718	19.17448
13.98723	14.21175	14.57531	15.23671	16.06429	17.01107	17.5783	17.98962	18.64472	19.10255
13.9595	14.17992	14.5372	15.18848	16.00593	16.94495	17.50965	17.92019	18.57599	19.03578
13.93221	14.14871	14.50003	15.14171	15.94967	16.88168	17.44435	17.85452	18.51173	18.97407
13.90536	14.11813	14.46378	15.09638	15.89548	16.82123	17.38235	17.79253	18.45187	18.91733

s, 2-20 years

3rd Percentile BMI Value	5th Percentile BMI Value	10th Percentile BMI Value	25th Percentile BMI Value	50th Percentile BMI Value	75th Percentile BMI Value	85th Percentile BMI Value	90th Percentile BMI Value	95th Percentile BMI Value	97th Percentile BMI Value
14.52095	14.73732	15.09033	15.74164	16.57503	17.55719	18.16219	18.60948	19.33801	19.85986
14.50348	14.71929	15.07117	15.71963	16.54777	17.52129	18.11955	18.56111	19.2789	19.79194
14.46882	14.68361	15.03336	15.67634	16.49443	17.45135	18.03668	18.4673	19.16466	19.66102
14.4346	14.64843	14.9962	15.63403	16.4426	17.38384	17.957	18.37736	19.05567	19.53658
14.40083	14.61379	14.95969	15.59268	16.39224	17.31871	17.88047	18.29125	18.95187	19.41849
14.36755	14.57969	14.92385	15.55226	16.34334	17.25593	17.80704	18.20892	18.85317	19.30665
14.33478	14.54615	14.88866	15.51275	16.29584	17.19546	17.73667	18.13031	18.75949	19.20097
14.30257	14.51319	14.85414	15.47414	16.24972	17.13726	17.66932	18.05538	18.67078	19.10132
14.27093	14.48084	14.82027	15.43639	16.20495	17.0813	17.60495	17.98408	18.58695	19.00761
14.23989	14.44909	14.78707	15.39951	16.1615	17.02753	17.54351	17.91635	18.50792	18.91973